

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION OF: Pierre DRUILHE, et al.

SERIAL NO: 09/732,754

GAU: 1644

FILED: December 11, 2000

EXAMINER:

FOR: SYSTEMIC IMMUNE RESPONSE INDUCED BY MUCOSAL ADMINISTRATION OF LIPID-TAILED
POLYPEPTIDES WITHOUT ADJUVANT



INFORMATION DISCLOSURE STATEMENT UNDER 37 CFR 1.97

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SIR:

Applicant(s) wish to disclose the following information.

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REFERENCES

- ☐ The applicant(s) wish to make of record the references listed on the attached form PTO-1449. Copies of the listed references are attached, where required, as are either statements of relevancy or any readily available English translations of pertinent portions of any non-English language references.
- ☐ A check is attached in the amount required under 37 CFR §1.17(p).

RELATED CASES

- ☒ Attached is a list of applicant's pending application(s) or issued patent(s) which may be related to the present application. A copy of the claims and drawings of the pending application(s) is attached.
- ☐ A check is attached in the amount required under 37 CFR §1.17(p).

CERTIFICATION

- ☐ Each item of information contained in this information disclosure statement was first cited in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this statement.
- ☐ No item of information contained in this information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application or, to the knowledge of the undersigned, having made reasonable inquiry, was known to any individual designated in 37 CFR §1.56(c) more than three months prior to the filing of this statement.

DEPOSIT ACCOUNT

- ☒ Please charge any additional fees for the papers being filed herewith and for which no check is enclosed herewith, or credit any overpayment to deposit account number 15-0030. A duplicate copy of this sheet is enclosed.

Respectfully submitted,

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LIST OF RELATED CASES

<u>Docket Number</u>	<u>Serial or Patent Number</u>	<u>Filing or Issue Date</u>	<u>Inventor/ Applicant</u>
226185US55DIV	10/206,535	07/29/02	DRUILHE
223855US0X CONT	10/161,760	06/05/02	DRUILHE, et al.
200805US55*	09/732,754	12/11/00	DRUILHE, et al.

*Present Application; listed for faxed information
NFO/ltc

Claims:

1. A method of inducing an immune response by the delivering of an effective amount of lipid-tailed protein to a mucosal membrane of a subject.
2. The method of Claim 1, wherein the lipoprotein is applied to the mucosal membrane without adjuvant.
3. The method of Claim 1, wherein the lipoprotein is applied to the mucosal membrane without using a needle.
4. The method of Claim 1, wherein the lipoprotein is applied intranasally, sublingually, by eye-drops, or suppositories.
5. The method of Claim 1, wherein the lipoprotein has at least one lipid coupled to a functional group of the said protein.
6. The method of Claim 1, wherein the lipoprotein has at least one lipid coupled to a α -NH₂ and/or ϵ -NH₂ functional group of the peptide.
7. The method of Claim 1, wherein application of the lipoprotein induces a B cell response.
8. The method of Claim 1, wherein application of the lipoprotein induces a T cell response.
9. The method of Claim 1, wherein application of the lipoprotein induces a systemic B and/or T cell response.
10. A composition consisting in at least one lipoprotein inducing a mucosal immune

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Related Pending Application
Related Case Serial No: <u>10/206,535</u>
Related Case Filing Date: <u>7-29-02</u>

response *in vivo* in absence of toxic adjuvant.

11. A composition according to Claim 10, wherein the adjuvant is non-toxic for the mucosal membranes.

12. A lipopeptide, wherein the lipopeptide is tailed with a lipid component.

13. The lipopeptide of Claim 11, wherein the lipid component is a palmitoyl residue having 16 carbon atoms.

14. The lipopeptide of Claim 12, wherein the lipopeptide is:

LSA3-NRII Ac-LEESQVNDDIFNSLVKSVQQEQQHNVK(PAM)NH₂ OR

LSA1-J Ac-ERRAKEKLQEQQSDLEQRKADTKKK(PAM).

15. The method of Claim 9, wherein the lipopeptide is:

LSA3-NRII Ac-LEESQVNDDIFNSLVKSVQQEQQHNVK(PAM)NH₂ OR

LSA1-J Ac-ERRAKEKLQEQQSDLEQRKADTKKK(PAM)NH₂.

16. A composition consisting in at least one lipopeptide inducing a mucosal immune response *in vivo* in the absence of toxic adjuvant, wherein the lipopeptide is at least one lipopeptide according to Claim 13.

17. A vaccine composition for mucosal administration containing at least one lipopeptide inducing an B and/or T cell response *in vivo* in absence of adjuvant.

18. A vaccine composition containing a lipopeptide according to Claim 13 in the absence of adjuvant.

19. An immunogenic composition containing a lipopeptide according to Claim 13.

20. A method of stimulating T-Lymphocyte responses *in vitro* after immunization via mucosal administration comprising the following steps:

- a) immunizing BALB/C mice by mucosal administration with a peptide tetanic toxin-pol HIV palmitic antigen,
- b) collecting of ganglia sub-mandibulaires at day 15, and
- c) visualizing T cell responses by labeling target cells with CFSE.

21. The method of Claim 1, further comprising administering a composition containing a lipid-tailed polypeptide or peptide, said lipid-tailed peptide having at least a lipid residue bound to an epitope T amino acid sequence and optionally at least one epitope B amino acid sequence.

22. The method of Claim 21, wherein the lipopeptide is an antigenic lipopeptide of sequence:

H-K(PAM)TT-pol 476-484

Nh₂-K(NεPam)GRQYIKKANSKFIGITERGRILKEP-COOH.

23. The method of Claim 1, wherein the lipopeptide is a lipid-tailed epitope T.

24. The method of Claim 23, wherein the lipopeptide is a lipid-tailed epitope T covalently linked to an epitope B peptide.

25. A composition comprising lipid-tailed polypeptide or peptide, said lipid-tailed peptide having at least a lipid residue bound to an epitope T amino acid sequence and optionally at least one epitope B amino acid sequence.

ABSTRACT OF THE DISCLOSURE

A method of inducing an immune response by applying an immune response inducing effective amount of a lipopeptide to a mucosal membrane of a subject.

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FIG. 1A

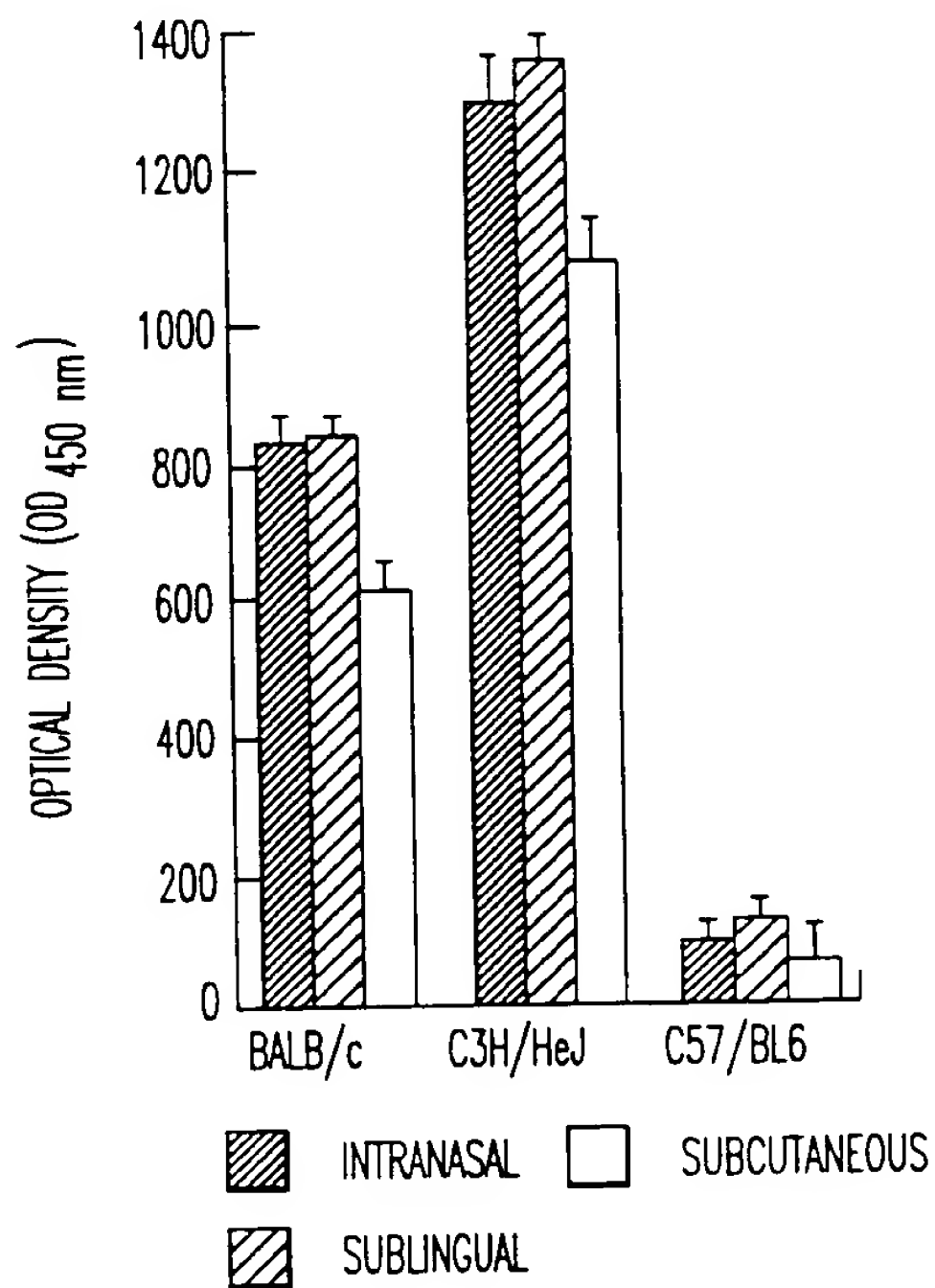


FIG. 1B. 1

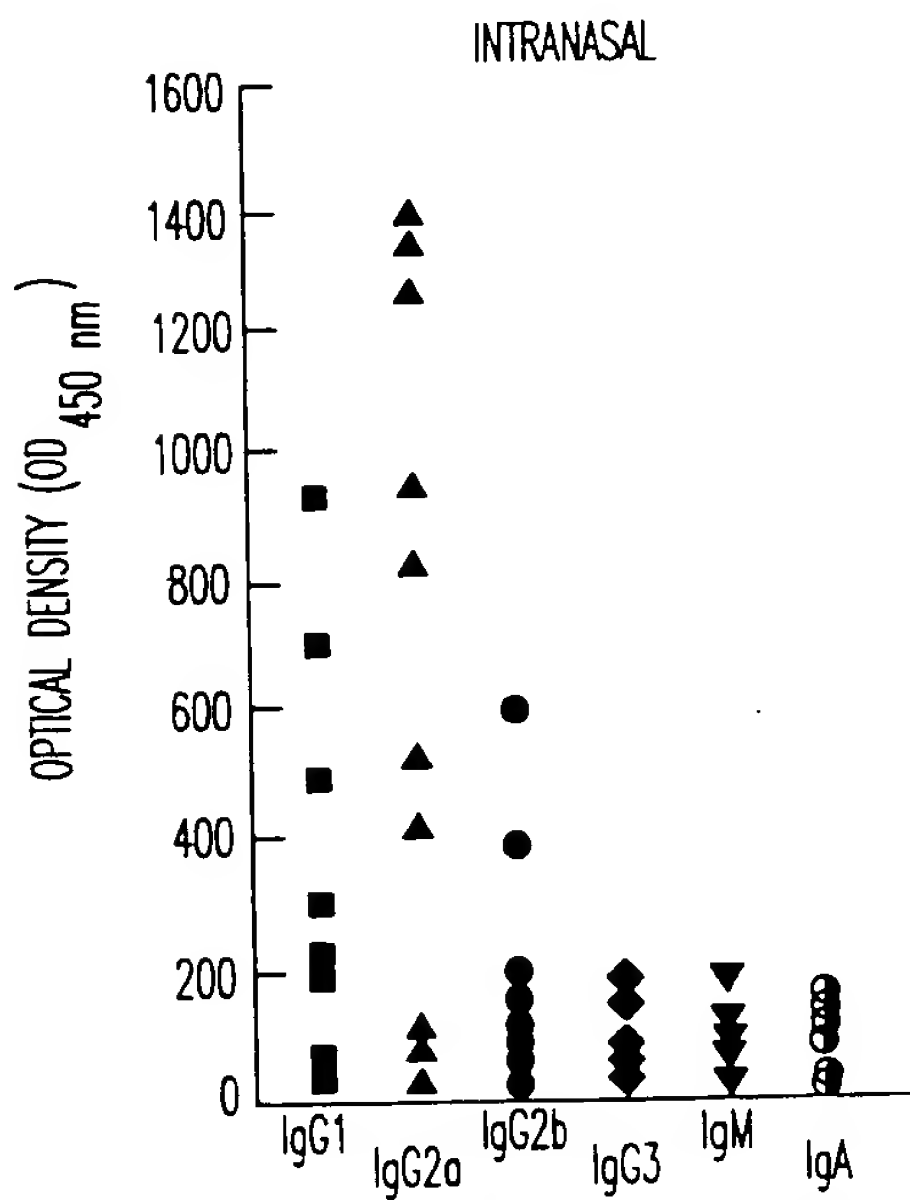


FIG. 1B.2

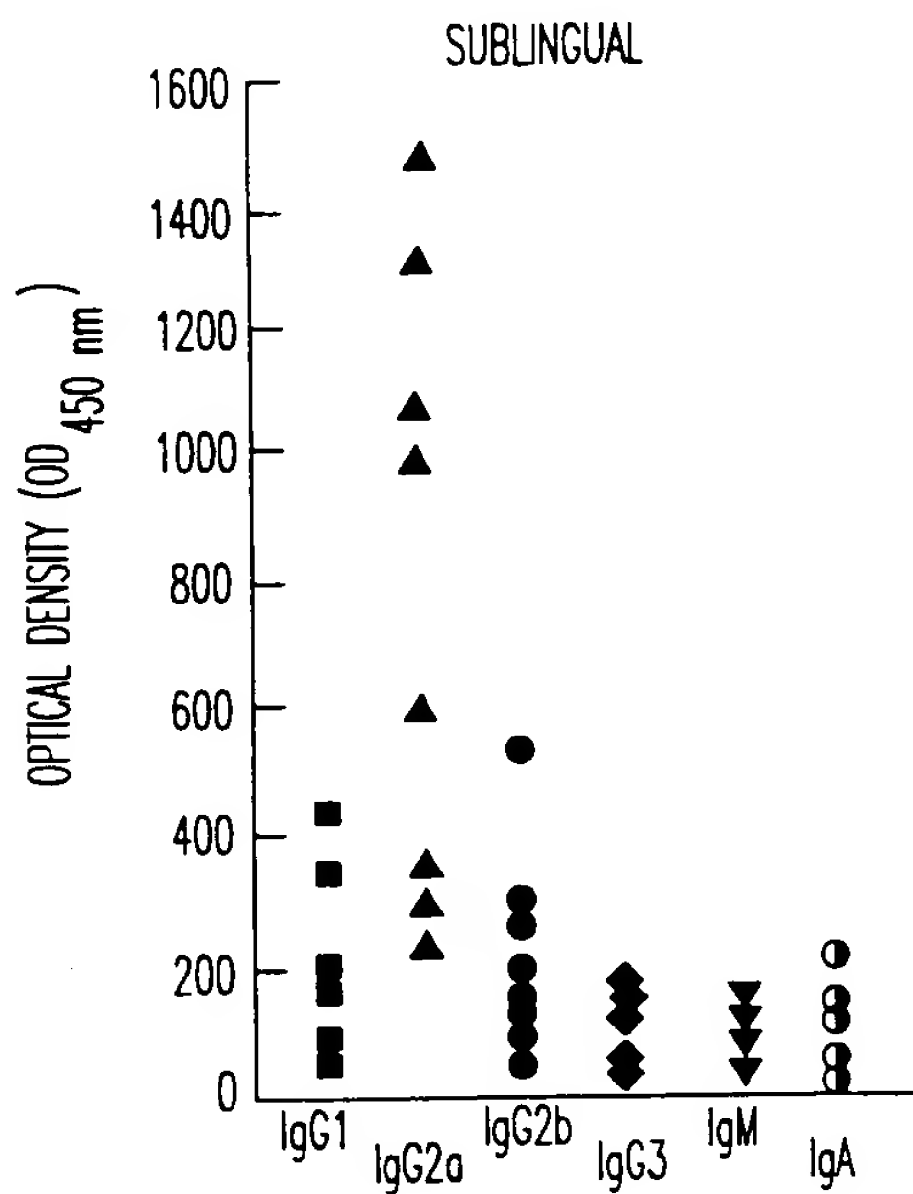


FIG. 1B.3

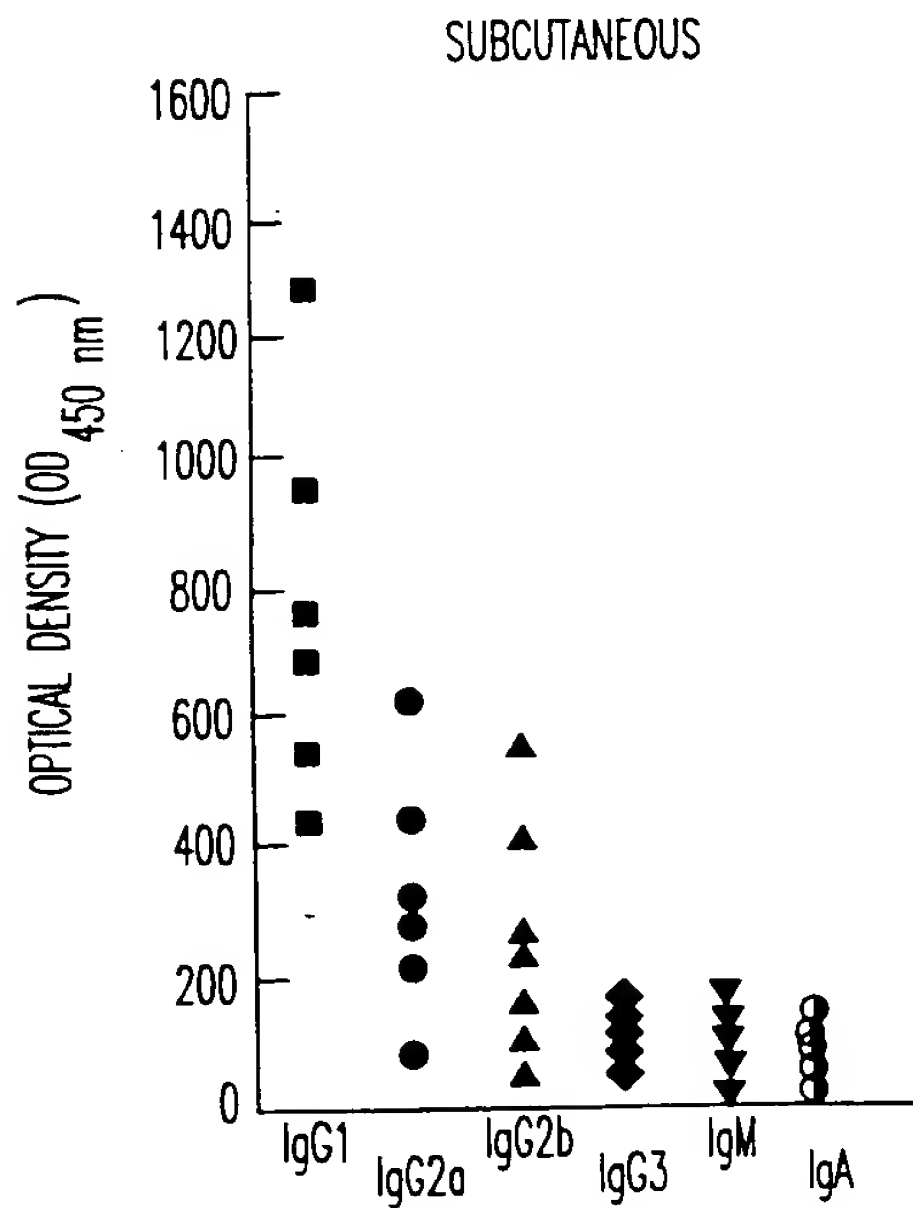


FIG. 2A

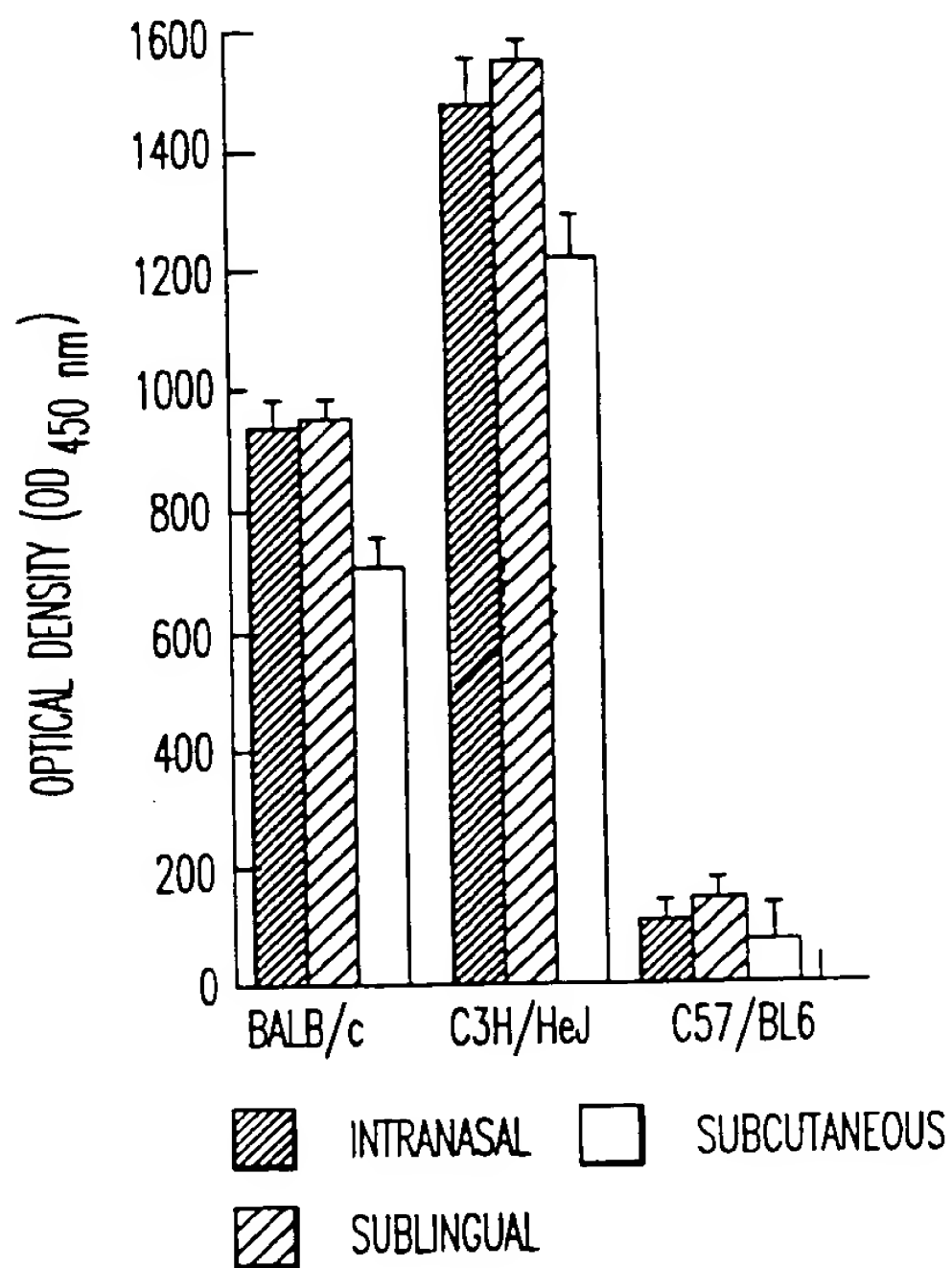
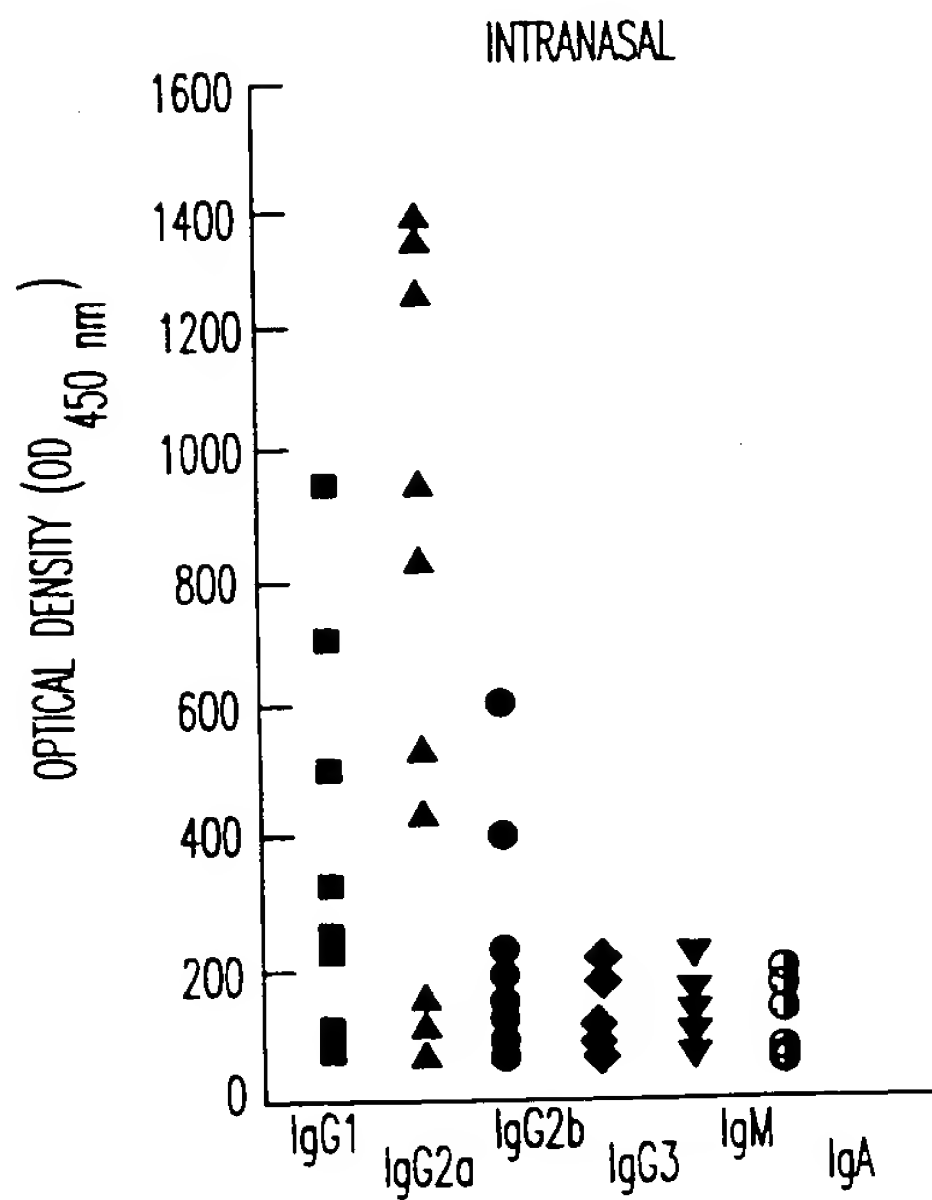


FIG. 2B. 1



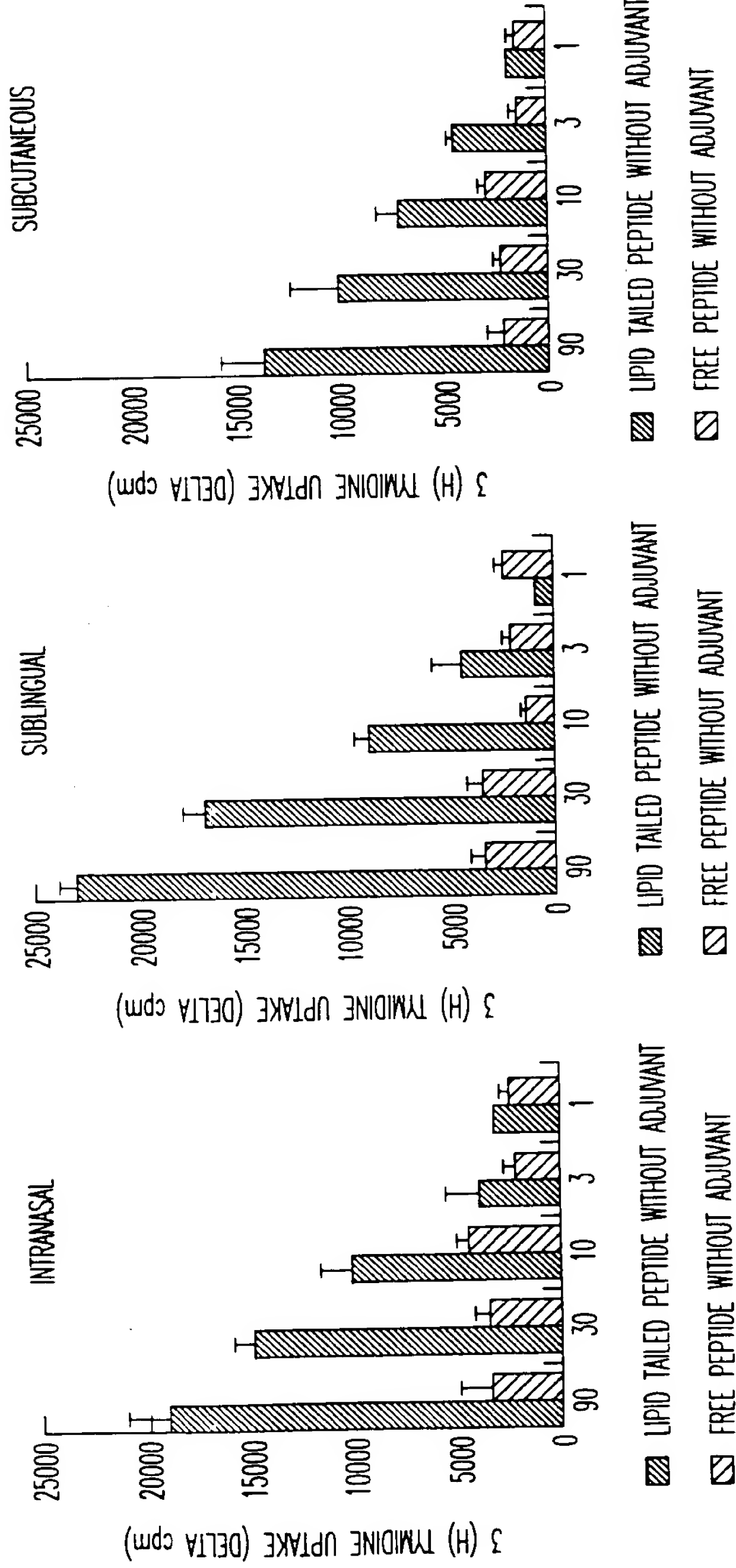


FIG. 3C

FIG. 3B

FIG. 3A

FIG. 4a

Control

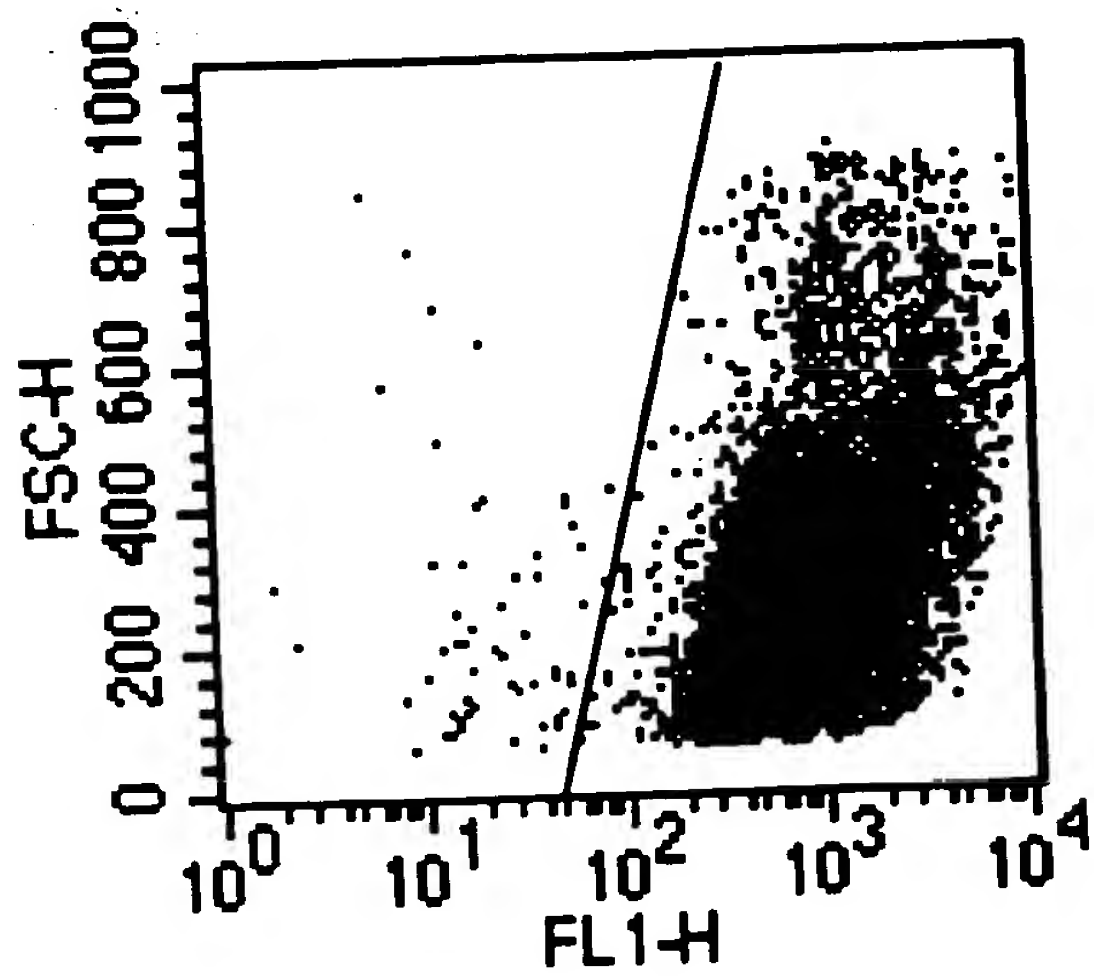


FIG. 4b

ConA

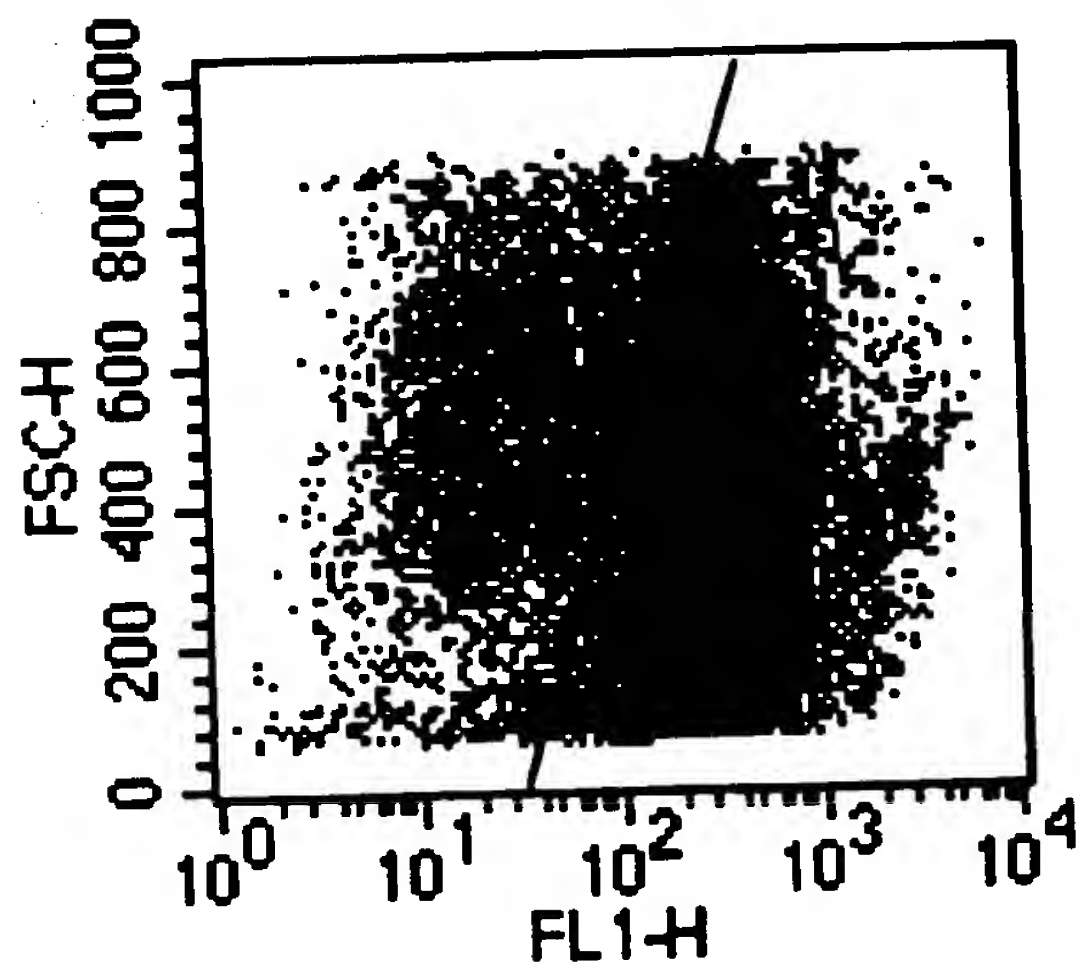


FIG. 4c

Pep 50

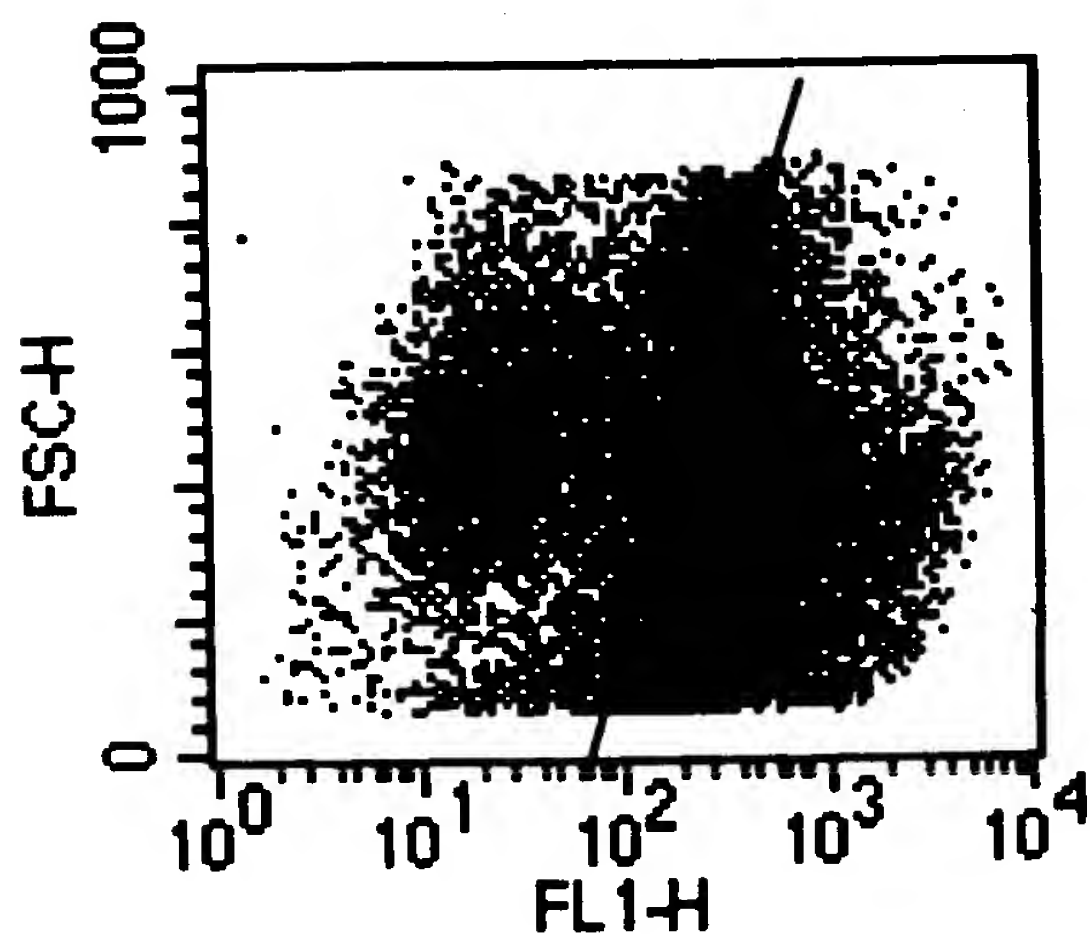


FIG. 4d

Pep 20

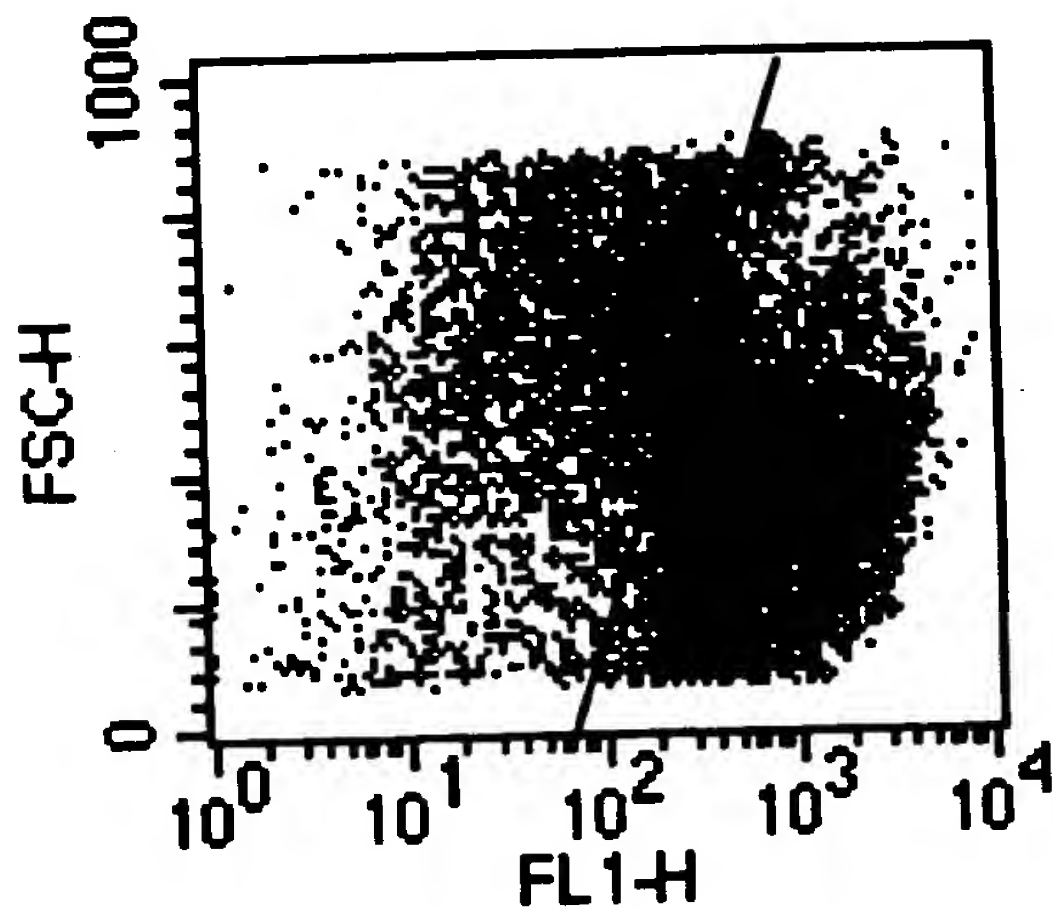


FIG. 4e

Pep 5

